



# Federal Air Surgeon's Medical Bulletin



01-2  
Summer 2001

**Aviation Safety Through Aviation Medicine**  
For FAA Aviation Medical Examiners, Office of Aviation Medicine Personnel,  
Flight Standards Inspectors, and Other Aviation Professionals.

U.S. Department of Transportation  
Federal Aviation Administration

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Access to Egress Study Completed (see page 12)



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## Aviation Training Now on Video

*Award-Winning Physiology Series  
Available for Purchase*

By Rogers V. Shaw, II

EVER SINCE AVIATORS left the confines and comforts of land and soared ever higher in the skies to reach breathtaking altitudes, the physiological factors that affect the human body have not changed. Hypoxia and spatial disorientation ever remain a threat to the uninformed pilot.

The Civil Aerospace Medical Institute's (CAMI's) Aeromedical Education Division in Oklahoma City, Okla., has been providing aviation physiology training for more than 40 years to pilots and aircrew interested in expanding their personal safety boundaries. Our goal is to educate and train pilots to cope with the physiological effects experienced in the aviation environment. One of the ways to accomplish this goal is with a one-day aviation physiology course for FAA flight crews, civil aviation pilots, and FAA aviation medical examiners.

This aviation physiology training has consisted of a classroom environment, which has been very successful, but with more than 650,000 pilots currently flying, the need for aviation physiology training has increased. With limited formal training available in aviation physiology, there is a need for some new didactic matter to help educators, instructors, safety counselors, and pilot schools reach more pilots with this valuable information. Over the past two years, we have been working to produce an aviation physiology series that would stand alone or could be part of a presentation on the basic subjects required under the Federal Aviation Regulations.

*Continued on page 4...*

## Final Emergency Medical Equipment Rule Issued

ON JUNE 12, 2001, the Federal Aviation Administration (FAA) issued a final rule that will require passenger-carrying aircraft of more than 7,500 lbs. maximum payload capacity with at least one flight attendant to carry at least one automated external defibrillator (AED) and at least one enhanced emergency medical kit.

This action responds to the Aviation Medical Assistance Act of 1998 (Pub. L. 105-170, 49 U.S.C. 44701), which directed the FAA to determine whether current minimum requirements for air carrier crewmember emergency medical training and emergency medical equipment should be modified. (See the *Federal Air Surgeon's Column* in the Summer 2000 edition.)

In response to the Act, the FAA conducted a year-long data collection study. The study revealed 188 death or near-death

*Continued on page 13...*

## Office of Aviation Medicine Changes Name

The Federal Aviation Administration's Office of Aviation Medicine has a new name. It is now officially the Office of *Aerospace Medicine*. Similarly, the Civil Aeromedical Institute has become the Civil *Aerospace Medical Institute*.

In announcing the reason for the two office title changes, FAA Administrator **Jane Garvey** said the changes were made to reflect the agency's "medical responsibilities associated with the commercial space transportation program."

Routing symbols remain the same.



# The Federal Air Surgeon's Column

## Setting a Positive Example

THOSE OF US WHO are parents appreciate the importance of setting a favorable example for our children. The parent who ignores this may find he or she has fostered a problem child with the potential for carrying self-destructive behavior into adult life. This not only negatively impacts the child and the parents, but society as a whole.

The same is true in our work life. The physician who counsels patients about the negative health aspects of smoking while holding a lighted cigarette is not likely to make much of an impression, nor is the overweight physician likely to get an obese patient to shed undesirable pounds.

### Federal Air Surgeon's Medical Bulletin

#### Secretary of Transportation

Norman Y. Mineta

#### FAA Administrator

Jane F. Garvey

#### Federal Air Surgeon

Jon L. Jordan, MD, JD

#### Editor

Michael E. Wayda

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'If the AME is so blasé about the importance of the medical examination and the airman's medical history, you can be assured the airman will be as well.'

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Jon L. Jordan, MD, JD

All too frequently I receive anecdotal reports concerning aviation medical examiners who perform cursory examinations and who even counsel airmen to not reveal certain medical information on application forms because to do so will only "create problems." This sort of behavior, which frequently cannot be documented sufficiently to permit disciplinary action in respect to the AME, undermines aviation safety. If the AME is so blasé about the importance of the medical examination and the airman's medical history, you can be assured the airman will be as well.

In regard to setting an example, I was astounded by the findings in a recent airplane accident involving a physician that sends a terrible message to physicians and airmen alike. This physician, a seemingly highly proficient pilot and frequent educator of others in piloting safety, was involved in a fatal accident that took the lives of four people, including himself. The accident also caused significant damage to property and injuries to persons on the ground.

What was so startling about this case is that postmortem toxicology studies revealed butalbital in the doctor's urine and body tissues. A review of his FAA medical records revealed no entries regarding the use

of medications or information on the presence of a medical condition for which the medication might have been used. However, a review of the doctor's personal medical records revealed a long history of migraine headaches and prescriptions for thousands of tablets containing butalbital. Fortunately, there was no evidence that any of his AMEs were aware of the medical history.

Although the doctor's use of butalbital was probably not a major contributor to the accident, the repeated falsification of his applications for medical certificates and his use of a medication that is contraindicated in aviation sends a sobering message. This is especially true in light of the doctor's experience and previous responsibilities in teaching others about aviation safety. If this knowledgeable doctor was willing to take this kind of risk, what about the typical pilot?

This accident serves as a reminder of our responsibilities to set a positive example for airmen. This can be accomplished easily through encouraging airmen to fully disclose their medical histories and by paying careful attention to the conduct of a good medical examination. It is an essential part of your job!

*JLJ*

## Aeromedical Certification Update

### Aviation Medical Examiner Quiz *How Sharp Are You on the Aeromedical Certification Standards?*

By Warren S. Silberman, DO, MPH



*In response to your requests for more information about the aeromedical certification process in a quiz format, Dr. Silberman has hatched ten more "physician puzzlers." Please let us know if the concept is useful and should be continued. —Ed.*

**1.** A student pilot airman comes in to your office for an FAA medical examination. She is not one of your patients, so you are unaware of her medical history. On the front side of the FAA Form 8500-8, she placed a check mark in the "yes" box of #18g (heart or vascular problem). In the blank space below 18g, she indicated that she has had a *coronary artery bypass procedure* in 1990. You issue the airman an unrestricted medical certificate that very day. Was this the best course of action? (Select 1 or more responses; answers are on page 5.)

☐ a. Issue ☐ b. Request more information ☐ c. Defer to the Aeromedical Certification Division (AMCD) ☐ d. Deny

**2.** Airman Frederick T. Freeloader comes into your office for his biannual first-class FAA Medical Examination. He checks the "yes" block of #18v for a history of a *Driving While Intoxicated* offense about 4 months ago. He is a very astute airman and has gone on one of the several aeromedical Web sites to see what is required and brings you a copy of his court records from the conviction. The remainder of the history and physical examination is unremarkable. Should you issue the medical certificate to him that day?

☐ a. Issue ☐ b. Request more info ☐ c. Defer to AMCD ☐ d. Deny

(FOR CORRECT ANSWERS AND DISCUSSION, TURN TO PAGE 5.)

*Dr. Silberman manages the Civil Aerospace Medical Institute's Aeromedical Certification Division.*

**3.** Airman Mary Kay informs her AME that in the past year she had a melanoma removed from her forearm. Her physician also discovered an antecubital node during her work up. She desires a second-class medical certificate. She brought her medical records with her, and they reveal that her lesion was a Breslow depth of 1.2mm. She had not received any further therapy and is doing well. What should you do?

☐ a. Issue ☐ b. Request more info ☐ c. Defer to AMCD ☐ d. Deny

**4.** A pilot who requires a first-class medical examination comes into your office for his flight exam. He informs you that 3 months ago he had a central retinal vein occlusion, and his vision can only be corrected to 20/200 in his right eye. Being the well-prepared aviator that he is, he brings in a completed Form 8500-7, which in fact describes an episode of central retinal vein occlusion. The condition has fully resolved, but the Snellen chart confirms him with the corrected visual acuity mentioned above. Assuming the central retinal vein occlusion will be allowed, what will you do about the poor corrected vision?

☐ a. Issue ☐ b. Request more info ☐ c. Defer to AMCD ☐ d. Deny

**5.** A pilot comes into your office for a first-class physical. He has not had an FAA examination for one year. It seems that the airman had a traumatic amputation of the left index, 3, and 4 middle and distal phalanges. He provides you with a videotape that a fellow

airman has recorded of the airman going through a takeoff, landing, and emergency procedures in the 737 simulator, which is the airman's primary aircraft. He appears to handle all these situations without any difficulty. Based on your knowledge of the regulations, what should you do?

☐ a. Issue ☐ b. Request more info ☐ c. Defer to AMCD ☐ d. Deny

**6.** This is the first visit to your office of an airman who is applying for a student pilot/medical certificate. He is 35 y/o with a history of HIV, on anti-viral therapy, with an episode of *pneumocystis carinii pneumonia* 8 months ago. By definition, this airman has had an AIDS-defining illness. He is in remission from the PCP pneumonia. First, as an AME can you give this airman a medical certificate prior to his departing your office? What will you need to provide the Aeromedical Certification Division (AMCD) for the airman to be considered for medical certification?

☐ a. Issue ☐ b. Request more info ☐ c. Defer to AMCD ☐ d. Deny

**7.** An airman comes into your office and reports a history of spontaneous passage of a calcium oxalate stone. This is the first episode of nephrolithiasis for this airman. The airman provides a post-stone passage IVP X-ray, which demonstrates a 5mm stone in the left renal pelvis. What should you do? (If you defer the case to the AMCD, what do you think will happen?)

☐ a. Issue ☐ b. Request more info ☐ c. Defer to AMCD ☐ d. Deny

**8.** Airman Jane Flash is applying for a second-class medical certificate and reports on her 8500-8 that 2 months ago she had an episode of deep venous thrombosis, was hospitalized, and treated with heparin and Coumadin. Upon further questioning, she relates a

*Continued on page 4...*

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## Quiz (from page 3)

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story of traveling 13 hours by car to visit her ailing mother. She brings in a letter from her treating physician, stating that she has not had any swelling in the past several weeks and that her INR ratios have been averaging 1.5. There was no pulmonary embolus nor was there any finding of coagulopathy. Should you issue the medical certificate?

- ☐a. Issue ☐b. Request more info  
☐c. Defer to AMCD ☐d. Deny

9. A private pilot goes to you 1 week after having a LASIK procedure for refractive correction. The airman is due her routine third-class medical exam. You check her Snellen visual acuity and find that she sees only 20/50 in each eye, despite the surgery. What should you do?

- ☐a. Issue ☐b. Request more info  
☐c. Defer to AMCD ☐d. Deny

10. An airline transport pilot comes to you for a routine first-class FAA medical exam. This would be his 41<sup>st</sup> birthday. A required electrocardiogram is performed and reveals a complete right bundle branch block. You check last year's ECG and note that it showed normal sinus rhythm with no evidence of the block. Should you issue the medical certificate?

- ☐a. Issue ☐b. Request more info  
☐c. Defer to AMCD ☐d. Deny

(FOR ANSWERS AND DISCUSSION, SEE PAGE 5.)

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## Video (from page 1)

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One of our challenges was to not only completely cover the subject matter but to also make the programs interesting enough to maintain viewer attention. Thus, this aviation physiology series was developed to cover the subject matter in an interesting and engaging manner so pilots would enhance their knowledge and fly more safely.

The professional quality of this series has been recognized when our program producers entered the tape "Self-Imposed Stress in Aviation" in the summer 2000 Aegis Awards competition in the Training/Education category. It was a finalist and won an "Award of Excellence."

The following is a list of the subjects covered in this series (with the running time of each tape indicated):

- ◆ Physics of the Atmosphere (11:08)
- ◆ Respiration and Circulation (13:00)
- ◆ Trapped Gas (10:04)
- ◆ Altitude Induced Decompression Sickness (10:30)
- ◆ Flying and Hypoxia (15:20)
- ◆ Hyperventilation: When Flying Takes Your Breath Away (7:00)
- ◆ Self-Imposed Stress and Aviation (18:15)
- ◆ The Ups And Downs of Cabin Pressurization (12:35)
- ◆ Understanding Aviation Oxygen Equipment (17:10)
- ◆ Fit for Flight (12:25)
- ◆ Motion Sickness and Aviation (8:28)
- ◆ Spatial Disorientation, Part 1: Why Not to Fly by the Seat of Your Pants (17:22)
- ◆ Spatial Disorientation, Part 2: Visual Illusions (15:48)

These 13 programs are all on one VHS tape, with a total running time of 179 minutes. Each subject is separated on the tape for easy use in a classroom; each program covers the

basic technical information and can be used as an introduction if more in-depth academic study is desired.

We will also have available by fall 2001 a PowerPoint presentation (on a CD-ROM) from the lesson review sections. Videotape sets ordered now will not yet have this feature.

For information about ordering the videotape or to download the order form, go to:

<http://www.cami.jccbi.gov/AAM-400/videoseries.html>

The total cost of the global survival videotape series is \$20, which also covers shipping. If you do not have access to a computer, you may order the videotape through: Opportunity Productions, Inc.

2506 N. Jefferson

Enid, OK 73701

(580) 234-2845

FAX (580) 242-8273

Web site: <http://www.opi2001.com>

Another educational program that we are currently working on is the eight-part series on Global Survival. Because of the complexity of this subject, these programs will be slightly longer in duration, with an average of 30 minutes per subject. We plan to complete production on this series and make it available in 2002. Updates will be available on the CAMI Web page (listed above).

The following lists the subjects covered in the global survival series.

- ◆ Will to Survive
- ◆ Survival Medicine
- ◆ Survival Kits
- ◆ Signaling
- ◆ Arctic Survival
- ◆ Jungle Survival
- ◆ Hotland Survival
- ◆ Water Survival

These videotape programs are intended for pilots, aviation schools, flight instructors, aviation medical examiners, and others in the civil aviation community.

*Fly safe and smart.*



*Rogers Shaw is the team leader of the Civil Aerospace Medical Institute's Airman Education Programs.*

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## Quiz Answers (from page 4)

1. Answer (c) or (d). No, the AME was very wrong! The 1999 *Guide for Aviation Medical Examiners* states that coronary artery disease that is symptomatic or that has required treatment is a specifically disqualifying illness. This requires the AME to deny or defer the airman to the Aeromedical Certification Division if the airman relates such a history. The airman must then request consideration under Title 14 of Code of Federal Aviation Regulations, Part 67.401 (*Authorization for Special Issuance*) if he desires medical certification. The AME should do this even if the airman furnishes complete medical records. (1999 *Guide for Aviation Medical Examiners*, pp. 3, 11-13, 47-48.)

2. Answer (b). You should question Mr. Freeloader as to any other previous convictions for driving while intoxicated. Ask if he reported the incident to the FAA (Civil Aviation Security Division, AMC-700) within 60 days of the conviction. If he has reported the DWI conviction, and there are no other DWI convictions, then you may issue the medical certificate. FAR Part 61.15 (e) states that the airman must report such a conviction to AMC-700 within 60 days of the conviction. Neglecting to do this places the airman at risk of suspension of all certificates. If he has reported the conviction to AMC-700 and has not had other DWI offenses, you may issue the medical certificate. (*AME Guide*, pg. 30.)

3. Answer (b) or (c): The AME should defer the medical certification to the AMCD. However, if Ms. Kay could get a current status of her medical condition, along with a MRI of the brain within the 14 days required to transmit the examination, they could hold the exam. If the evaluation and testing were negative, the AME could phone either the Regional Medical office or the AMCD in Oklahoma City and get a verbal authorization to issue the medical certificate. (The aeromedical certification of melanoma was discussed in the summer 2000 *Federal Air Surgeon's Medical Bulletin*.)

4. Answer (c) : According to the *AME Guide*, this visual acuity is considered *blindness* and you must now consider the airman's vision to be *monocular*. You will need to know when the incident actually occurred and what the visual acuity was prior to it. Since this is a rather sudden event, the standard routine is to keep the airman grounded for a period of 6 months. This will allow the airman to become accustomed to monocular clues. The airman can also get some dual instruction to evaluate how well he has adjusted. At the end of the 6-month period, the airman is to request permission for a Medical Flight Test for the purpose of obtaining a statement of demonstrated ability (SODA). For *monocular*ity, the SODA can be obtained for any class. (*AME Guide*, pg. 84, G.)

5. Answer (c): Being the proactive AME that you are, you mail the tape to the AMCD and ask one of the physicians there to phone you when it arrives. The medical review physician reviews the tape and tells you that they are going to issue a SODA (based on experience) to the airman. (*AME Guide*, pg. 13-15.)

6. Answer (b) and (c): You may not issue the medical certificate. The Federal Air Surgeon will allow medical certification of airmen who have had an AIDS-defining illness—providing they have been in remission for 6 months. For the AMCD to make a determination, it would be great if you would get the airman to provide us with: current status, brief history of their illness from physician specializing in the treatment of this disease, list of medications (and if there have been any side-effects), CD4+ lymphocyte count, viral load by polymerase chain reaction, CBC, liver function studies, and either a COGSCREEN or neurocognitive testing. (*AME Guide*, pg. 76, Appendix B, pg. 31).

7. Answer (c) or (d): Applicants with this condition will not likely gain their medical certificate until the stone passes. If the airman has had an extracorporeal shock-wave lithotripsy and demonstrates that the stone is no longer present, medical certification by the AMCD will be likely. (*AME Guide*, pg. 54-55.)

8. Answer (c) or (d): You should defer the medical certification to the AMCD. You have the choice of calling the Regional Medical Office or Oklahoma City and explaining the case. The DVT and the medical information that the airman provided are satisfactory to make a determination. This case will be denied for inadequate anticoagulation. The AMCD would like the average INR values in the case of DVT to be around 2.0. The airman will be required to present at least 3 values separated by one week that are all within this range. (*AME Guide*, pg. 49.)

9. Answer (b) or (c): As you know, the standard for near-visual acuity in third-class airmen is that each eye must correct to 20/40. Because this airman can only correct to 20/50, you could consider two possibilities: Either the postoperative visual acuity has not yet stabilized, or the acuity has stabilized and this airman has been left with less than an *ideal* result. Either way, to gain medical certification, the airman will need to have a restriction placed on her medical certificate requiring her to possess corrective lenses. The airman should have provided the AME with a letter from the treating physician that stated what the corrected visual acuity was preoperatively, the date of surgery, what the acuity was at the time of release from care, and whether the airman is experiencing any halos or glare. It is quite possible that this airman has not reached the full benefit of the surgery. (*AME Guide*, pg. 85; *FASMB*, Fall 1998, pg. 5.)

10. Answer (b): No, this is a change and must be evaluated. You should obtain a cardiovascular evaluation, with attention paid to ruling out any coronary disease. A 2-D echocardiogram should be performed, along with a maximal Bruce protocol stress test. Now it is possible to interpret a treadmill test in the presence of a complete right bundle branch block, but it would be better to have a radionuclide stress test. If the studies are all negative, a phone call to your Regional Flight Surgeon's office or the AMCD could get you the permission to issue the certificate. (*AME Guide*, pg. 46, 101.)



### Scoring the Quiz

10 correct: *Way to go! Your certification decisions are sound.*

8-9 correct: *Not bad, but you need to do a little work.*

7 or less: *Re-read and study the Guide for Aviation Medical Examiners. Call your regional flight surgeon's office if you have questions.*

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## Vision Considerations in Aeromedical Certification

Case Study, by Suzanne Ferguson, DO

***Abstract.** Medical conditions with risk for sudden incapacitation continue to be a safety hazard of primary concern for aviation medical examiners. A methodical examination avoids safety hazards and minimizes liability for the examiner. A standard for certifying airmen with a history of monocular vision is one such issue.*

**N**EARLY HALF A MILLION applications for Airmen medical certificates are received and processed each year by the Aeromedical Certification Division in Oklahoma City, Okla. The FAA has delegated qualified private physicians to perform the physical examinations, test, and issue a medical certificate according to Title 49 of the United States Code, which specifies requirements for airmen medical certification.

The physician's role in the proper qualification of airmen is to protect public safety through solid knowledge and observance of the United States Code affecting airmen. As medical knowledge is constantly changing, regulations must also change to address physical impairments that may or may not be compatible with safety.

Likewise, conditions with risk for sudden incapacitation continue to be a safety hazard of primary concern for aeromedical certification. A methodical examination avoids safety hazards and minimizes liability for the examiner. A standard for monocular vision is one such issue, as the following case illustrates.

**Case History (Monocular vision).** A 64-year-old pilot with 1400 hours of flying time and a history of glaucoma was granted a class-three medical certificate in 1998 after obtaining a Statement of Demonstrated Ability waiver for no useful vision in the left eye. A complete eye examination, performed in accordance with FAA Form 8500-14, was submitted with his next

regular physical examination. A surgical history of trabeculectomy and laser bleb revision five years prior was also noted. His family history was significant for a father with chronic glaucoma.

The updated FAA Form 8500-14 showed distant vision in the right eye with vision correctable to 20/20. The left eye had been eviscerated due to central retinal vein occlusion and corneal ulceration with rupture of the globe. A prosthesis was placed during the interim. Applanation tonometry revealed an intraocular pressure OD of 25 mmHg 15 minutes after medication. Slit lamp examination revealed OD with previous trabeculectomy and OS with prosthesis. No fusion ability was present due to prosthesis OS.

His aviation medical examiner deferred the case to the Aeromedical Certification Division.

This case was again reviewed for medical certificate renewal. Visual health is addressed in 14 CFR Part 67.303(d), which states that an airman should have no acute or chronic pathology that interferes with the vision or could progress to that degree. The *Guide for Aviation Medical Examiners* (1999) likewise addresses vision (pages 92-3), stating that in primary glaucoma, applicants are usually denied certification because of the possibilities of unanticipated acute visual changes.

**Outcome.** This airman was issued a denial in accordance with Part 67.103(d)(e), 203(d)(e), and 303(d) because of blindness in the left eye and the disease of glaucoma in the right eye. The teaching point in this case is that with monocular vision, the "good eye" should not have any disease that could progress and must also correct to the vision standards as set forth in the medical regulations. It was determined that this pilot is at risk for progression of his glaucoma, based on the pathophysiology of the disease.

**Glaucoma.** Glaucoma is usually seen after age 40 and is the second leading cause of blindness in the US. Glaucoma is an interruption of the normal flow of aqueous humor in the eye. The resulting rise in intraocular pressure causes damage to the optic nerve, which the patient experiences as decreased visual acuity and may result in blindness. There are several classifications of glaucoma, and treatment ranges from topical medication to surgical intervention. Narrow-angle or primary glaucoma is uncommon and caused by a sudden rise in intraocular pressure. Secondary glaucoma is due to an underlying cause such as trauma, cataracts, tumor, or uveitis. If no other pathology exists in the eye, aviators can be considered for special issuance when treatment has been successful and eye pressure has been restored to normal.

**Vision and Flying.** Vision is a pilot's most important sense. Near, distant, and intermediate vision are used to obtain information for flight. Distant vision is not only important in avoiding midair collisions; it is required for VFR operations at take-off and landing, navigation, and in-flight control. Near and intermediate vision is used in checking instrumentation and maps. The physiologic

*Dr. Ferguson is a member of the Occupational Medicine Residency staff at The University of Oklahoma Health Sciences Center in Oklahoma City, Okla. She was a resident at the Civil Aerospace Medical Institute when she wrote this case report.*

Continued ➤

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## Vision from page 6

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blind spot refers to the eye's macula, which is completely blind due to a lack of rods and cones. In a person with binocular vision, this is not a problem because an object cannot be in the blind spot of both eyes at the same time. If the vision of one eye is obstructed, an object could go undetected in the blind spot of the other eye. The night blind spot occurs in an area of 5 to 10 degrees in the center of the visual field caused by an absence of rods on the fovea. The night blind spot is responsible for an object fading away once visualized or even going completely undetected when viewed directly at night.

Other factors affecting vision include excessive ambient illumination, from light reflected off sources from within or outside the aircraft, uncorrected refractive errors, hypoxia, or self imposed stresses such as medications, alcohol consumption, tobacco use, hypoglycemia, or fatigue. Monovision contact lenses are not allowable due to impaired binocular vision and depth perception.

**Patient Education.** Patient education should be an integral part of every aviation medical examiner's exam. Some essential points about vision, as it pertains to flying, can be found in the pamphlet "Pilot Vision" [Publication AM-400-98/2], provided free of charge from the Civil Aerospace Medical Institute. To order this brochure, contact:

FAA Civil Aerospace Medical Institute  
Shipping Clerk, AAM-400  
P.O. Box 25082  
Oklahoma City, OK 731235



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## FDA News

### Herbal Products Recalled

The Food and Drug Administration (FDA) on June 20, 2001, issued a nationwide alert to the recall of 13 Chinese herbal products containing aristolochic acid, warning consumers to discontinue their use because the products may present a serious health hazard.

Aristolochic acid, found in certain plants and botanicals, is toxic to the kidneys, and it is a potent carcinogen. The use of aristolochic acid-containing products has been linked to increased risk of kidney cancer in people who have consumed it.

These products were distributed nationwide (primarily to acupuncturists, herbalists, and herbal stores) in powder or capsule form and sold under the "Treasure of the East" label.

The recall was initiated as a result of public health concerns. Although no illnesses have been reported, Blue Light, Inc., the manufacturer of the products, no longer distributes products that may contain aristolochic acid.

Aviation medical examiners should be vigilant for the airman who uses alternative medicinal therapies—whether herbal, diet, new age, or whatever. Simply ask the airman about the reason for the use of self-medication and consider whether there is any underlying disease.

### Gleevec Approved for Leukemia Treatment

Gleevec (imatinib mesylate, also known as STI-571), a promising new oral treatment for patients with chronic myeloid leukemia (CML) was approved for use in patients.

**Relevant Aeromedical Certification Policy.** The Office of Aerospace Medicine does not approve new prescription medications in new drug categories for use by airmen and controllers until one year after the medications have been approved by the FDA.



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## Some Things Never Change

Many standards established in the early days of aviation medicine have remained just that—standard operating procedures. The following are two examples of enduring standards that are still current (April 1985 *Federal Air Surgeon's Medical Bulletin*).

**Q.** Is it permissible to give copies of FAA Form 8500-8 (Application for Airman Medical Certificate) to applicants to take to another examiner for completion?

**A.** No. FAA Form 8500-8 is a controlled form made available only to designated examiners and to certain military installations designated to issue FAA medical certificates. The form is to be issued to the applicant only in the examining physician's office and is not to be carried to another physician or to a military installation for completion.

**Q.** Occasionally, I am asked to examine and to issue FAA medical certificates to qualified applicants who desire the certificate for activities other than piloting aircraft. This includes participants in such groups as skydivers, racing drivers, etc. Members of these groups are apparently required by their organizations to hold third-class FAA medical certificates. Am I to follow the same procedures as for pilots—issue the certificate (if qualified) and forward the FAA copy to the Oklahoma City office?

**A.** Yes. The usual procedure for handling FAA medical certificates should be followed regarding requests from sky divers, hot rod racers, and all other applicants. The class of medical certificate for which the applicant applies will be issued if he or she possesses the required medical qualifications specified by FAA regulations. There is no requirement regarding an applicant's intended use of the certificate. However, it will be helpful if the AME will comment on the FAA Form 8500-8, in item 60, regarding the intended purpose. It is not unusual for such organizations to require FAA medical certificates for their members. ...Adhere to the age requirement if the applicant requests the combination medical/student pilot certificate. Because of the student pilot privileges of the combination ticket, the applicant must be at least 16 years old and be able to read, speak, and understand English. There is no age requirement for the medical certificate alone (the white certificate).



## Employees Recognized for Their Achievements

### AAM Annual Awards 'Reaching for the Stars'

**T**HE FAA's Office of Aerospace Medicine (AAM) held its annual awards program in Washington, DC, to recognize the "stars" within its organization and to acknowledge employee dedication and achievements.

"In an era when commercial space travel will soon be a reality, change and reinvention is a necessity," said Federal Air Surgeon Dr. **Jon Jordan**. "Our employees must do their personal best and use teamwork and ingenuity if they are to accomplish our vision of global leadership in aerospace medicine," he continued, "and because this organization has many outstanding employees, AAM will succeed in accomplishing this vision."

Dr. Jordan and Deputy Federal Air Surgeon Dr. **Fred Tilton** held the ceremony on April 18, 2001, naming these individuals and teams:

#### OUTSTANDING MANAGER

##### ★James E. Whinnery, PhD

Civil Aerospace Medical Institute  
*Under his leadership, a new wide-body test facility was created to develop advanced analytical methods for accident investigation; tests on safety improvement on side-facing seats; and infant seats aboard aircraft.*

#### OUTSTANDING INNOVATOR

##### ★Richard L. DeWeese

Civil Aerospace Medical Institute  
*Developed new SAE aerospace standard for improved child safety in commercial aircraft; protective child restraint systems.*

#### OUTSTANDING TEAM

##### ★Age 60 Team: Dana M. Broach, PhD, David J. Schroeder, PhD, and Howard C. Harris, MA

Civil Aerospace Medical Institute  
*Planned and conducted a series of investigations into the relationship of aviation accidents with pilot age; reported their findings and recommendations to the US Congress and the aviation industry.*



Award winners pictured with Dr. Jordan (standing, far right) at the awards convocation in Washington, DC.

#### ADMINISTRATIVE EXCELLENCE (TIE)

##### ★Patricia A. Wood

Albuquerque Medical Field Office  
*Provided health-related information and services; guided others in establishing an extensive database of useful information.*

##### ★Shiela T. Gibson

Southern Regional Medical Office  
*For high-quality work and services during the closing of a field office, relocating records and equipment to other offices.*

#### TECHNICAL/SCIENTIFIC PUBLICATION

##### ★Nicole T. Vu, PhD

Civil Aerospace Medical Institute  
*Developed a methodology for distinguishing ingested alcohol from post-mortem alcohol production; subsequent technical report described procedures that will be used by labs worldwide.*

#### AAM MISSION SUPPORT

##### ★Kenneth G. Larcher

Civil Aerospace Medical Institute  
*Initiated money-saving efforts in converting CAMI's 747 hull into a useful research and cabin safety tool that will enhance aviation safety.*

#### OUTSTANDING CUSTOMER SERVICE

##### ★Tracie L. Allison, RN

Civil Aerospace Medical Institute  
*Developed a program for hearing conservation, identified work sites with need for noise abatement control measures for employees.*

#### FRIEND OF AAM

##### ★James L. Clemons

Southwest Regional Logistics Division  
*Enabled continuation of logistics services, despite funding cutbacks, through strategic planning and efficiency.*

#### FLIGHT SURGEON OF THE YEAR

##### ★Robert S. Poole, MD

Headquarters  
*For dedication to assisting pilots with their medical certification questions and problems; medical assistance to FAA employees.*

#### INSPECTOR OF THE YEAR

##### ★Charles B. Fish

Alaskan Regional Medical Division  
*Provided expert testimony and support in a court case involving use of marijuana by a pilot.*

#### AAM OFFICE OF THE YEAR

##### ★Drug Abatement Team

Headquarters  
*Monitored nationwide employee drug and alcohol testing programs for compliance, initiating enforcement efforts when necessary.*

#### EXCEPTIONAL REGIONAL EMPLOYEE PERFORMANCE (TIE)

##### ★Susan K. Edwards

Southwest Region  
*Volunteered to assume unexpected workload, resulting in continuation of office services and functions.*

##### ★Jo An Perry

Southwest Region  
*Provided office efficiencies and solutions to a crisis caused by staffing problems.*





# AME Survey Results

By Mike Wayda

We read you...loud and clear.

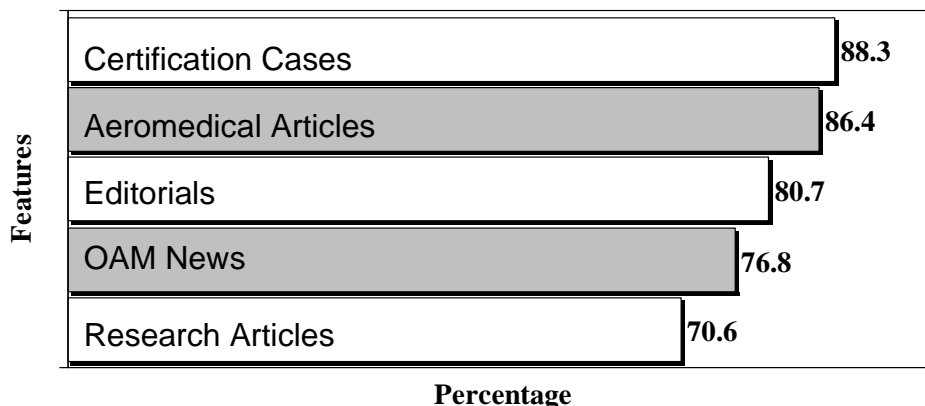
For the past four-plus years, we have asked aviation medical examiners attending Federal Aviation Administration periodic training seminars to complete a survey about their familiarity with and use of the *Federal Air Surgeon's Medical Bulletin*. In that period, more than 3,800 questionnaires were filled out and then tabulated.

We thank the respondents for their suggestions, and we intend to incorporate as many as we practicably can into articles and issues that would best serve the needs of AMEs everywhere.

Here are the results of the survey.

1. Do you regularly read the *Bulletin*?  
Yes: 93% No: 7%
2. Features regularly read? (see Figure 1)
3. Does your staff regularly read the *Bulletin*?  
Yes: 22.7% No: 77.3%
4. Do you place the *Bulletin* where it is readily accessible to airmen?  
Yes: 28.4% No: 71.6%
5. Is the information in the *Bulletin* useful to you as an AME?  
Yes: 94.5% No: 5.5%
6. Is the frequency of publication appropriate?  
Yes: 86.5% No: 13.5% More Often: 10.2%;  
Less Often: 1.5%
7. How would you improve the quality?  
Some of the most important items to those who answered Question 7:
  - ✓ More aeromedical certification case studies and examples in each issue—  
“Provide information about medications and which can be allowed in airmen...”  
“...describe the logic behind decisions made.”
  - ✓ More “how to” articles—  
“Have articles about when to defer to the Aeromedical Certification Division.”
  - ✓ Brief reminders of aeromedical standards—  
“...especially changes in rules and regulations.”
  - ✓ Quizzes, tests of knowledge—  
“Q & A of typical problem areas for the AME.”

Figure 1. Readers' Preferences



## ✓ Miscellaneous requests—

“Provide information about back problems...many pilots seem to have poor posture.”

“Need phone numbers of people in regional offices.”

## ✓ Summaries—

“...you could give bullets of key points.”

## ✓ Longitudinal data—

“What are the outcomes of various cases over time?”

8. How much do you charge for FAA physical exams?  
(See Table 1.)

Table 1. Fees charged by AMEs.  
(Jan. 2000-May 2001)

Type Service	Fee (average)	No. responding
1 <sup>st</sup> Class exam	\$77.10	1954
2 <sup>nd</sup> Class exam	\$69.62	3256
3 <sup>rd</sup> Class exam	\$66.69	3269
EKG transmittal	\$61.03	246

## Letter to the Editor

Dear Editor:

The question and answer section of the *Federal Air Surgeon's Medical Bulletin* is a welcome addition. Keep up the good work.

A.E. Parris, MD

# FAA Program Probes Pilot Sobriety

By FAA Headquarters Intercom

IN THE DECADE SINCE its start, the FAA's DUI-DWI Investigations Program has significantly increased air safety in the United States by weeding out more than 3,000 pilots with drinking or drug problems.

The program, which marked its 10th anniversary in November, is little known outside of pilot circles.

Based at the Mike Monroney Aeronautical Center in Oklahoma City, Okla., the program's purpose is to identify any pilot with a drug- or alcohol-related motor vehicle violation, take appropriate regulatory action, and turn that information over to the FAA's Aeromedical Certification Division for monitoring.

In the last 10 years, more than 4 million names of pilots have been submitted to the National Driver Register, which keeps track of all motor violations recorded in the United States. The names of 100,000 pilots — mostly general aviation — have appeared on the register with drug- or alcohol-related motor vehicle violations and subsequently were investigated by the FAA.

More than 8,300 enforcement actions have been meted out, and some 3,000 pilots have lost their medical and airman certificates as a result of those investigations. That's nearly one-third of all revocations issued by the agency.

The need for increased monitoring became evident in 1988 when the Department of Transportation's Inspector General's Office conducted an audit of pilots who had records for drug- or alcohol-related motor vehicle violations. To ensure compliance with a reporting requirement on the medical certificate application form and to ensure accuracy of FAA records, the FAA gave airmen who had falsified their applications a

'There used to be a widespread problem ... I think the word is out that the FAA is looking into this.'

— Mark Sweeney

chance to avoid enforcement action if they volunteered the correct information by a specific date.

Thousands of pilots admitted to violating the regulations. Congress tasked the FAA to address the problem of pilots' untruthfulness about their alcohol and drug abuse on applications for medical certificates. The agency began an education campaign

to warn pilots that falsification of applications for airmen medical certificates would be caught, investigated and punished. Every week since the program began, the FAA sends the names of all pilots applying for medical certificates to the driver's register. That's about 400,000 names each year.

Mark Sweeney, manager of the Compliance and Enforcement Branch of the Civil Aviation Security Division, says the number of violations have decreased in the last three years.

"There used to be a widespread problem," Sweeney said about falsified applications. "I think the word is out that the FAA is looking into this." Sweeney added that airline transport pilots are the most compliant with the regulations. Only about one tenth of one percent of all pilots investigated by the FAA are airline transport pilots.



**Table 1.** Statistics for Alcohol Use Among All Pilots (As of 12/31/ 2000). Source: FAA Aeromedical Certification Division.

Pathology	First Class	Second Class	Third Class
One alcohol offense	4,694	3,934	10,318
Two alcohol offenses	440	443	998
Three alcohol offenses	75	95	177
Four alcohol offenses	30	26	50
Five alcohol offenses	5	7	10
Six alcohol offenses	1	-	2
Seven alcohol offenses	-	1	3
Alcoholism	981	221	381
Alcohol abuse (does not meet alcoholism criteria)	975	656	1,812

# Identification of Alcoholism in a Medical Office Diagnostic Setting

*Practical Guidelines for Diagnosing Alcoholism No Matter What the Signs or Symptoms May Be*

By Barton Pakull, MD

*While this article has been previously published in the summer 1990 Bulletin, it is appropriate to review the important message it expresses (condensed from the original). —Ed*

**T**HE DIAGNOSIS of alcoholism in an aviation medical examination setting, where the applicant has more than one reason to deny the existence of symptoms related to the condition, presents the examining physician with a difficult challenge. Questions about how much one drinks, the pattern of doing so, and the types of beverages consumed are usually answered in a misleading manner by alcoholics before they have been rehabilitated.

However, it is necessary to ask and record the answers if one suspects that a drinking problem exists. There may be no complaints offered by the applicant and very few physical signs or laboratory findings associated with an alcoholic condition. Often, an alcoholic presents a variety of medical problems that do not necessarily suggest that alcoholism is present. These medical problems can be either chronic or acute, but because they are not usually specific indicators, they are difficult to associate with alcoholism.

## Definition

A practical working definition of alcoholism is that it is a condition where loss of control over the consumption of the substance (alcohol) is accompanied by various deleterious effects on physical health, as well as personal or social functioning. Personal and social functioning includes such diverse areas of life as legal and financial matters, marital and family adjustment, and personal productivity, including occupation and education. Most important, we would expect to see deleterious effects on safety, both personal and occupational. This includes skilled performance tasks, as well as normal social activities.

*Dr. Barton Pakull is Chief Psychiatrist in the FAA Office of Aerospace Medicine in Washington, DC.*

## Manifestations of Physical Dependence

One of the most obvious symptoms of a developing alcoholism condition is tolerance. Alcohol is a sedative drug. If a person is still able to stand after having consumed an amount of alcohol that would have sedated a normal person, then that person has developed tolerance. While reports of the amounts a person may drink are often unreliable, certainly any including of a blood alcohol level greater than 0.2% at any time is indicative of the development of some tolerance. A blood alcohol level of 0.25% or above is very strong evidence of the tolerance associated with alcoholism.

The development of tolerance eventually leads to the development of signs and symptoms of withdrawal. Alcohol withdrawal signs often begin 4 to 6 hours after discontinuing ethanol intake. The most common sign of withdrawal is morning tremulousness. Associated with morning tremors is morning drinking, which simply means that the individual is treating withdrawal symptoms with another dose of a sedative drug. A frequent symptom associated with early withdrawal is insomnia. This is most often seen in depression so that sometimes the presence of an alcoholism problem is missed. Other early symptoms of withdrawal are irritability, restlessness, apprehension, and mild difficulties with concentration. A history of isolated grand mal convulsions strongly suggests alcohol withdrawal, especially when there are other symptoms of early withdrawal and a negative EEG after the seizure. The development of a full withdrawal syndrome with disorientation, hallucinations, and a pronounced coarse tremor with a rapid pulse and diaphoresis is conclusive evidence of alcohol addiction.

## Common Presenting Signs and Symptoms

The odor of alcohol on the breath of an applicant, especially if the examination is done in the morning, should lead the physician to question the examinee very closely about his or her drinking recently and in general. It may be appropriate to request that the applicant voluntarily submit to a blood alcohol test as a means of quantifying alcohol consumption. Any amount of alcohol in the system at the time of a routine physical examination should make the examiner suspect an alcoholism problem, especially if the examination was done in the morning.

Another very common symptom of alcoholism is the blackout. This occurs when the individual becomes intoxicated and, though seeming to be functioning normally, will be unable to remember all or part of what happened after a certain point. These are obviously frightening experiences. If a person can control his or her drinking, he or she would not allow more than one blackout to happen. Therefore, if a history of more than one blackout is given, an alcoholism problem should be suspected.

## Legal and Social Problems

Alcoholics tend to have legal and social problems such as drunk driving (DUI), or public intoxication arrests, and fights while intoxicated. Even without other evidence of alcohol abuse, two DUIs within a short period of time (e.g., 4 years) or multiple DUIs over a long period of time are highly indicative of alcoholism. Alcoholics will also admit to losing or changing friends and to socially inappropriate and embarrassing behavior related to their drinking.

*Continued on page 13...*

# Office of Aerospace Medicine *NEWS*

## Access to Egress Study Completed

By Garnet A. McLean, PhD

On June 28, 2001, after more than three months of intense effort, the Civil Aerospace Medical Institute (CAMI) completed the largest study of emergency evacuations ever conducted. Utilizing a transport category Type-III overwing exit, 2,544 research subjects evacuated the CAMI Aircraft Cabin Evacuation Facility in various conditions of passageway configuration, exit hatch removal and disposal technique, research subject density in the cabin, and subject motivation level.

The study was designed to evaluate evacuation efficiency related to differences in passageways configured at either 6, 10, 13, or 20 inches in width and with subjects placing the hatch either in the seat row adjacent to the exit or throwing it through the Type-III exit to land outside the facility.

The research groups were comprised of 30, 50, or 70 subjects, allowing evaluation of density effects on total group evacuation times and individual subject flow rates through the exit. Research subject motivation was established at two different levels; a "low" motivation condition was produced by merely informing subjects that the experimental situation modeled a crashed and burning airplane, while the

"high" motivation condition added the incentive of a cash bonus payment to those subjects who were among the fastest ¼ of the entire group to "escape" the airplane.

The subjects were contract employees supplied by a local firm under contract to Civil Aerospace Medical Institute. To supply 2,544 subjects who met the study's health and other protocol requirements, the company had to contact and screen twice that number of candidates. Local church groups and other civic organizations used the project as a fund-raiser and supplied a number of the subjects.

The CAMI research crew worked six days a week to accommodate individuals whose work schedules precluded weekday participation.

The results of the study are to be used initially by the Cabin Safety Harmonization Working Group of the FAA's

Aviation Rulemaking Advisory Committee to support efforts by the FAA and JAA intended to establish a standardized minimum Type-III exit passageway configuration for both the US and Europe. More complete accounts of the results will also be published soon as Office of Aerospace Medicine technical reports.

*Dr. McLean is the team leader of the CAMI Aeromedical Research Division's Cabin Safety Research Team, and he is the project manager for the evacuation study.*



**LAST ONE OUT.**  
The 2,544th subject exits the evacuation facility.

## Astronaut, Former AME, Dies in Accident

Dr. Patricia Hilliard Robertson, a crew-support astronaut for the International Space Station, died from injuries suffered in a plane crash on May 22. Robertson, 38, was practicing landings and take-offs in an experimental two-place aircraft at Wolfe Air Park (near Houston, Texas) when the single-engine aircraft cartwheeled off the runway and was destroyed by fire.

A former aviation medical examiner for

both the Federal Aviation Administration and National Aeronautics and Space Administration, Dr. Robertson was designated as an AME in Girard, Pa., in 1993.

## Deputy RFS Retires

Dr. Art Tilgner, Deputy Alaskan Regional Flight Surgeon, retired. He says he has had a "very positive, rewarding career and experience with the FAA and has made many good friends." He will "miss everyone greatly."

## OAM Employees Honored

At its annual meeting in Reno, Nev., the Aerospace Medical Association, AsMA, honored Office of Aerospace Medicine staff members with the following recognition:

- **Fredrick Tilton, MD**, (Deputy Federal Air Surgeon) was selected member of the International Academy of Aviation and Space Medicine.

- **Melchor Antuñano, MD**, (CAMI Director) was elected vice-president of AsMA, president of the Space Medicine Branch, and received an "Honorary Federal Air Surgeon" recognition plaque granted by the Director General of the Civil Aviation Authority of the Dominican Republic.

- **David Schroeder, PhD**, (Manager, Human Resources Research Division) was elected vice-president of AsMA and was recognized with the Henry L. Taylor Founder's Award.

- **Guillermo Salazar, MD**, (Southwest Regional Flight Surgeon) was re-appointed chair of AsMA's Education and Training Committee, and became president-elect of the Iberoamerican Association of Aerospace Medicine.

- **Scott Shappell, PhD**, (Manager, Human Factors Research Laboratory) was elected AsMA Fellow.

- **Douglas Burnett, MEd**, (Manager AME Programs) was elected AsMA Fellow.

- **Charles DeJohn, DO**, (Medical Officer, Aeromedical Research Division) was appointed chair of AsMA's Aviation Safety Committee.

- **Carol Manning, PhD**, (Researcher, Human Resources Research Division) was re-appointed chair of AsMA's Resolutions Committee and was elected as the Aerospace Human Factors Association representative to the AsMA Council.

## Rotation in ASW

Dr. Mark Coakwell, resident in Aerospace Medicine at the USAF School of Aerospace Medicine, recently spent a week-long rotation in the Southwest Regional Medical Office with Dr. **Bill Salazar** and his staff, learning about the FAA and civil aviation medicine.



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## ***Final Rule from page 1***

incidents in which 108 people died. Of these 188 incidents, 119 were cardiac-related, resulting in 64 deaths. There were four post-flight, long-term survivors who had been administered an AED shock on airlines that voluntarily carried the devices and 40 cases in which an AED might have been used, if it had been available.

The FAA received 370 comments on the proposal from foreign and domestic air carriers, AED manufacturers, medical and labor organizations, universities, and private citizens, including medical specialists. Commenters largely favored the rule, and several requested that the FAA expand further the amount of equipment and training of flight attendants being proposed.

The new rule amends Title 14 of the Code of Federal Regulations, Part 121, Appendix A and adds a new Part 121, Subpart X. This new subpart imports provisions already in existence under current Part 121, Subparts N and O (for emergency medical equipment and training) and conforms them to the new requirements.

Appendix A is revised to add an AED requirement and to expand the existing emergency medical kit from its current form to include the following:

**Medications:** oral antihistamine, non-narcotic analgesic, aspirin, atropine, a bronchodilator, additional epinephrine, lidocaine, and saline for intravenous infusion.

**Equipment:** an IV administration kit with connectors (and, for placing the IV, alcohol sponges, tape, bandage scissors, and a tourniquet); a

self-inflating manual resuscitation device (AMBU bag) with masks; and CPR masks.

All crewmembers will be required to receive initial training in the location, function, and intended operation of the enhanced emergency medical equipment. Flight attendants will receive initial and recurrent training in AED usage and in cardiopulmonary resuscitation.

The new rule becomes effective on April 12, 2004.

The entire rulemaking docket, from which a copy of the final rule may be downloaded, is available via the Internet at:

<http://dms.dot.gov/search>

(Under the search function, enter "7119," which is the docket number for this action.)



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## ***Alcohol from page 11***

### **Emotional and Medical Problems**

People with alcoholism have emotional difficulties and may therefore mask their alcoholism with symptoms/complaints of depression and anxiety. A common indicator of an alcoholism problem is the observation by others of a personality change when drinking. This usually means that the individual becomes irritable and harder to get along with when drinking, sometimes even being verbally or physically abusive. Alcoholics often point to stresses in their lives to explain their anxiety and depression. Careful scrutiny will often reveal that it is the consequences of their drinking that cause the so-called stresses in their lives.

It is important to get the pertinent records when any information about inpatient or outpatient treatment for so-called emotional problems is revealed. This also includes such things as contact with therapists or social agencies related to marital problems. Although many people seek counseling for temporary adjustment problems that are unrelated to aviation safety issues, sometimes those records

indicate the presence of alcohol abuse problems or reveal that there was treatment for alcoholism.

The medical symptoms and signs associated with alcoholism are many and varied. The most common gross pathology is damage to the liver. It should also be kept in mind that pancreatitis is a medical problem that may be secondary to, or complicated by, alcoholism. Any indication of liver damage which may be related to drinking, such as elevation of liver enzyme levels, even if temporary, is to be considered a primary sign of the adverse effect on physical health related to alcoholism.

Elevated blood pressure is a common finding in heavy drinkers. Although common also in nondrinkers, it is noteworthy that when a heavy drinker stops drinking his or her blood pressure often comes down. Acute gastritis is commonly associated with the heavy drinking of alcoholism. Arrhythmias and other cardiac symptoms associated with alcoholic myopathy also occur. Alcohol is known to suppress bone marrow responses, resulting in hematological problems. The most common sign of this is an increased mean corpuscular

volume. Often, there will be a history of frequent injuries resulting from accidents that occur during intoxication. Therefore, any history of injuries should be carefully reviewed.

It should not be forgotten that the tolerance associated with alcoholism leads to a cross tolerance with other sedatives so that we often find that individuals with an alcoholism problem require more anesthesia for surgery and more sedatives than a normal person in order to obtain a therapeutic effect

### **The Bottom Line**

To determine that an alcoholism condition exists with respect to Federal Aviation Regulations, substantial documenting evidence must exist. However, in those cases where there is reason to believe that the applicant is excessively consuming alcohol, but a clear-cut diagnosis cannot be made, deferral of certification is appropriate.

Under these circumstances, the Federal Aviation Administration will gather such additional information as may be necessary to establish or disprove the diagnosis.

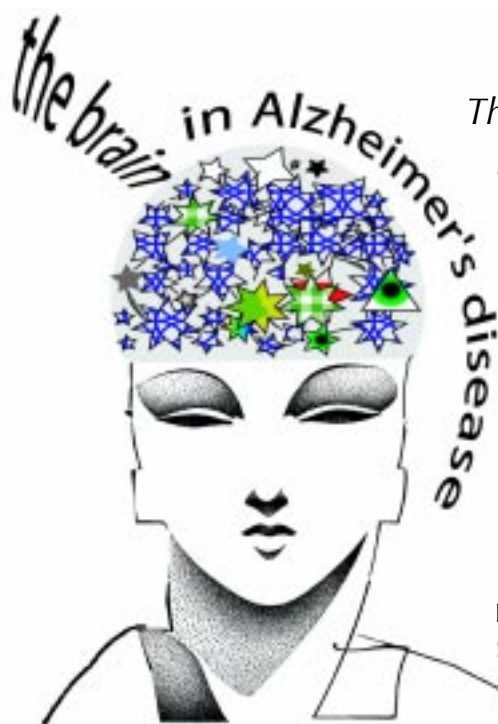


## Just for the Health of Pilots

neurons in AD. The tangled clumps of neurons begin in lower centers of the brain that control memory, then rise to a higher level of memory (the hippocampus), and later progress to the cortex of the brain. The cerebral cortex (neocortex) is estimated to contain about 15 billion nerve cells, the entire brain about 100 billion to a trillion or more. A neuron is the brain's fundamental unit of information transmission. Neurons connect with other neurons by axons (fibers extending *from* a nerve cell) and dendrites (fibers attracted *to* a nerve cell). The junctions where these connections are made are called synapses. At the synapses, electrical impulses release *neurotransmitters*—the chemical messengers in our brain. In AD most of the trillions of circuits in the cerebral cortex are soon destroyed. No useful information can be transmitted.

Maybe in the next decade the Human Genome Project and molecular biology will help develop a biochemical intervention that will stop, prevent, and maybe reverse AD. The medical profession is recognizing that brain chemistry plays a major role in virtually all mental disorders. *Research in psychiatry is drifting away from the couch and toward the chemistry lab.* For example, mental conditions such as schizophrenia and bipolar disorder (formerly called manic-depressive disease) are thought to be genetic defects in brain wiring or chemistry, and psychiatrists know the cures will be found in pharmaceuticals rather than psychotherapy. The same for Alzheimer's disease. (Of course, psychotherapy will always be an essential part of psychiatry, but the major devastating disorders will be treated by psychopharmacology.)

*Continued* ☞



*The human brain can be considered a skull-enclosed, three-pound, electrochemical analog computer. In Alzheimer's disease, the circuits are down.*

**By Glenn R. Stoutt, Jr., MD**  
Senior FAA Aviation Medical Examiner

**L**AST MONTH MY WIFE AND I went to a funeral home in Evansville to pay our respects to her aunt, who had died the day before in a nursing home. She was 93 and had lived in the nursing home for seven years. She had Alzheimer's disease, as do about half of people over 85 and half of all people in nursing homes.

Aunt Esther had lost most of her mental faculties about ten years before. She answered all questions and greetings by smiling and saying "Y...e...s." She had a visitor years ago and said, "I know I should know you, but I don't remember your name." The visitor told her that he was her son.

The horror of Alzheimer's disease (AD) afflicts almost four million Americans—and wrecks not only the lives of the patients but also their families, who must become constant caretakers. The cause is unknown. It is a *progressive neurodegenerative* disease characterized by confusion, poor judgment, restlessness, loss of personality, forgetfulness, language deterioration, and loss of memory. It usually develops after age 65, but may occur in persons as young as 40

years old. With the aging of our population, the incidence may double in the next decade. There is a strong hereditary and racial susceptibility. (The incidence is four times as great in African-Americans as in white Americans. It is much less common in Asians.). Persons with Down Syndrome develop AD if they live to age 40. There is no cure at the present and no way to slow down the progression. In the brain of Alzheimer's patients are two abnormalities: twisted nerve cell fibers (*neurofibrillary tangles*) and a sticky protein called *beta amyloid*.

The human brain can be considered a skull-enclosed, three-pound, electrochemical analog computer. It is undoubtedly the most advanced and complex marvel yet discovered in the universe. Its surface is covered by a thin layer called the *cerebral cortex* that measures only about 1.4 millimeters thick (one inch equals about 25 millimeters). *This layer is responsible for most of our high-level thinking and information processing.* It is the final focus of the devastating damage caused by the twisted, sticky web of

*Dr. Stoutt is a partner in the Springs Pediatrics and Aviation Medicine Clinic, Louisville, Ky., and he has been an active AME since 1960. No longer an active pilot, he once held a commercial pilot's license with instrument, multi-engine, and CFI ratings.*

### Some Signs of AD

Many physical and psychological conditions can mimic AD, but it should be considered in a friend or family member if some of the following signs are noted to persist. The signs should not be ignored as a natural accompaniment of aging. Other conditions in the elderly such as poor hearing or vision, depression, side effects of medication, alcoholism, sickness, or grief may mask as Alzheimer's disease.

- Recent memory loss that affects job skills
- Difficulty performing familiar tasks
- Problems with language
- Disorientation as to time and place
- Poor or decreased judgment
- Problems with abstract thinking
- Misplacing things
- Changes in mood or behavior
- Changes in personality
- Loss of initiative

— Source: Alzheimer's Association (USA)

### Getting Older Is Fun

We all have "senior moments." Granddad's doctor told him to walk two miles a day. That was around Christmas and we don't have the slightest idea where he is now.

"Doc, I need help. I can't remember anything. You have pills to make me sleep, pills to make me stay awake, pills to control my appetite. Surely you can help me with my memory. I can't remember anything."

"How long has this been going on?"

"Uh,...how long has *what* been going on?"

### Factoid

An article in *Medical Economics* (Jan 2001) reported that only three percent of physicians smoke. It also said that 66 percent of physicians consumed alcohol. However, we were not told whether *consumed* referred to an occasional drink, social drinking, moderate drinking, or falling-down alcoholism.

*Medical research is now aimed at the genetic and molecular level. Cures for certain potentially fatal diseases of the past are now a slam-dunk. Scurvy was eliminated by vitamin C. (British sailors were called "Limeys" when it was found that the vitamin C in limes prevented the ravages of scurvy.) Vitamin D (now added to milk) has wiped out rickets; iodized salt prevents a certain kind of goiter; vitamin B<sub>12</sub> prevents pernicious anemia. Unfortunately, the prevention and cure of our major medical problems is not so simple.*

Physicians know that dietary and lifestyle changes are important in treating certain diseases. For example, lowering your saturated fat for high cholesterol; reducing body weight in diabetes; and lowering salt intake for high blood pressure. But, these are only *stopgap* measures. Our current medications for high cholesterol, high blood pressure, diabetes, and arthritis are only moderately effective and are often used in a trial-and-error method. What is the essential biochemical defect that causes these and other problems?

The answer will come when biogeneticists find what gene is defective or what enzyme or biochemical is present or absent and causes a specific disease. Alzheimer's disease can be considered a model for all medical research.

Although the cause of AD is unknown, head injury, hypertension, or stroke may trigger its onset.

"Use it or lose it." People who are active mentally, are more highly educated, have strong religious beliefs, and are more socially integrated are much less at risk. Positive emotions appear to have a protective effect; negative emotions (fear, depression, low self-worth) make a person more likely to develop AD. "Accentuate the positive; eliminate the negative." In early life, how we express ourselves in language and having an active intellectual life may indicate less susceptibility to AD..

As for diet, there is strong evidence that high folic acid (folate) levels delay the development of AD. This is not surprising, as folic acid is necessary for the development of the neural tube in the embryo. A lack of folic acid is a major cause of spina bifida in newborn babies, and the reason the FDA now requires fortification of bread and cereals with folic acid. A good source of folate is dark greens, especially spinach. (Popeye was right.) Multivitamin capsules contain the recommended daily allowance (RDA) of 400 micrograms. The "folic acid factor" may be a clue to the genetic/biochemical defect present.

One thing is certain about Alzheimer's disease. There is some biochemical, probably genetic, defect that destroys the way nerves are able to send messages. There will probably be an answer in the next decade.

Yours for good health and safe flying,

*Glenn Stoutt*

**Note: The views and recommendations made in this article are those of the author and not necessarily those of the Federal Aviation Administration.**

## Training Specialist Leaving Program

By Douglas Burnett

**T**HE AVIATION MEDICAL Examiner Program says "good-bye" to Mr. Mike Bromley, who was selected for a position in the FAA Academy Radar Maintenance Training Program. For nine years, Mike has served in the aviation medical examiner seminar program, coordinating AME theme seminars, facilitating, basic AME seminars for new AMEs, providing speaker assistance and feedback, and participating in course development.

His support was instrumental in providing training to some 5,300 AMEs, in more than 115 seminars, delivering approximately 320,000 hours of training.

Mike's efforts were key in the development of the Multimedia AME Refresher computer-based course, the Clinical Aerospace Physiology Review for AMEs and the revision of the Medical Standards and Procedures course for AME staff.

At each seminar, AMEs always complimented Mike's ability to keep things moving, on schedule, and with everyone informed.

Speakers often remarked about his enthusiasm, willingness to help with audiovisual equipment, training demonstrations, and PowerPoint presentations. Mike knew each speaker's needs; had water on the podium, a flip-chart or 35mm projector handy, and was always ready.

*Douglas Burnett is the Aeromedical Education Division's aviation medical examiner program manager.*



# AME TRAINING

## Aviation Medical Examiner Seminar Schedule

### 2001

August 24 - 26	----- Salt Lake City, Utah	----- CAR (2)
September 10 - 14	-- Oklahoma City, Okla.	----- Basic (1)
October 26 - 28	----- Charleston, S.C.	----- OOE (2)
December 3 - 7	----- Oklahoma City, Okla.	----- Basic (1)

### 2002

January 11 - 13	----- Fort Worth, Texas	----- AP/HF (2)
February 15 - 17	----- Tampa, Fla.	----- N/NP/P (2)
March 18 - 22	----- Oklahoma City, Okla.	----- Basic (1)
April 19 - 21	----- Costa Mesa, Calif.	----- CAR (2)
May 6 - 9	----- Montreal, Canada	----- OOE (3)
June 10 - 14	----- Oklahoma City, Okla.	----- Basic (1)

### CODES

AP/HF --- Aviation Physiology/Human Factors Theme

CAR ----- Cardiology Theme

OOE ----- Ophthalmology - Otolaryngology - Endocrinology Theme

N/NP/P -- Neurology/Neuro-Psychology/Psychiatry Theme

- (1) A 4½-day basic AME seminar focused on preparing physicians to be designated as aviation medical examiners. Call your regional flight surgeon.
- (2) A 2½-day theme AME seminar consisting of 12 hours of aviation medical examiner-specific subjects plus 8 hours of subjects related to a designated theme. Registration must be made through the Oklahoma City AME Programs staff, (405) 954-4830, or -4258.
- (3) A 3½-day theme AME seminar held in conjunction with the Aerospace Medical Association (AsMA). Registration must be made through AsMA at (703) 739-2240.

The Civil Aerospace Medical Institute is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians.